



Resource Management & Research Report

Indiana State Parks & Reservoirs

No. 11-2

Title: 2011 State Park Deer Reduction Results

Author: Mike Mycroft, Chief of Natural Resources

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Abstract: 2011 marked the 19th year since Indiana State Parks began deer reductions in an effort to mitigate damage to vegetation and unique habitat by an overpopulation of white-tailed deer (*Odocoileus virginianus*). The first reduction hunt was held at Brown County State Park in 1993. Multiple parks have hosted non-recreational deer reductions annually since 1995 and have included up to 21 parks per year. The decision to initiate reductions at individual parks has been based on scientific vegetation monitoring. Decisions to continue reductions at individual parks are made annually using harvest data and consideration to elemental occurrence and status of rare, threatened, and endangered flora that could be affected by excessive browsing by deer. In 2011, 6,091 hunter efforts were used to assist 21 parks and removed 1,546 deer. A trial standby drawing was moderately successful at four parks helping reduce the impact of originally drawn hunters not showing up or not returning on the second day of each hunt. The 2011 harvest yielded a mean harvest per effort of 0.27, making 2011 the second most successful effort toward achieving collective harvest rates since the program began.

Introduction

White-tailed deer (*Odocoileus virginianus*) have thrived in Indiana State Parks since they were reintroduced to Indiana in the middle 20th century. Mild winters, absence of once present natural predators, and a decades-long lack of human hunting within protected state park boundaries resulted in excessive browsing by deer that compromised the overall composition, structure and function of most natural communities throughout the state park system. Browse lines and small, malnourished deer were a common sight at most state park properties by the late 1980's.

The first deer reduction hunt was held in 1993, with 466 hunters harvesting 392 deer. Since 1995, as many as 21 parks have held reduction hunts in the same year (Table 1). The decision to initiate reductions at any one park has been supported by data from monitoring particular herbaceous species at individual parks. Once parks begin reductions, harvest data are incorporated into annual decisions regarding habitat recovery and whether specific parks require a reduction the following year. Research indicates that vegetation and habitat begin to recover from over browsing at a property once a rate of firearm harvest per effort (H/E) nears 0.22-0.20 and/or a harvest per square mile (H/Mi².) is between 12 & 16 deer. Hunters are drawn for each park to fit a density of one hunter per 15-20 acres. Parks where archery is regularly used (Clifty Falls and Fort Harrison) due to urban interface have an H/E target of 0.10-0.08 and one hunter per 7-10 acres. Participants have been allowed to take up to three deer each

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(one of which could be antlered). These deer are in addition to regular statewide bag limits. Hunters who harvest receive “bonus” permanent tags from the park at no charge.

2011 Reduction Effort

Twenty one state parks required deer reductions in 2011. Additionally, Cave River Valley State Natural Area (north of Campbellsburg), managed by Spring Mill State Park, was included. The first two-day hunt was held November 14 & 15 and the second was held November 28 & 29. A total of 1,546 deer were harvested with 6,091 hunter efforts across two, 2-day reductions. Though the mean 2011 H/E of 0.27 was the second most successful for the program, 17 of the properties continued to experience elevated harvests above target levels.

Weather was marginal statewide for both reductions. Temperatures were warm on November 14 and 15 with high winds, rain and thunderstorms scattered throughout much of the state. The second round on November 28 and 29 was cooler with gusts and mixed rain and snow for most parks.

Mean no-show of originally drawn participants remains steady at 47%. This number represents drawn hunters that do not show at all or only one of the two days they are drawn for.

Table 1. Number of State Parks and Deer Harvested 1993-2011

Year	Number of Parks	Total Deer
1993	1	392
1994	0	0
1995	5	1,422
1996	7	2,027
1997	9	2,430
1998	10	1,735
1999	10	1,599
2000	15	1,697
2001	13	1,483
2002	14	1,609
2003	20	2,121
2004	15	1,253
2005	16	1,336
2006	17	2,213
2007	18	1,300
2008	17	1,468
2009	17	1,334
2010	16	1,689
2011	21	1,546
Total Deer:		28,654

H/E data indicate relative stability from 2007 to 2011 with a slight increase in 2010. The cumulative five year average mean H/E is currently 0.06 above target levels (Figure 1). Most parks participating with firearms in 2011 continue to remain above the target H/E threshold after the 2011 reduction effort. Both archery parks remain above the 0.08 target.

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A similar trend is demonstrated with H/Mi^2 . The cumulative five year average mean H/Mi^2 is currently 0.07 above target levels (Figure 2). 15 parks participating in 2011 remain above the target H/Mi^2 threshold after the 2011 effort.

Percentage of adult bucks harvested has increased steadily since the reduction program began. The current cumulative five year mean adult buck harvest is 33%.

However, eight properties harvested 40% or more adult bucks in 2011 (Figure 3). One park harvested 56% adult bucks in 2011. The annual average number of parks that exceeded 40% from 2000 to 2010 was three.

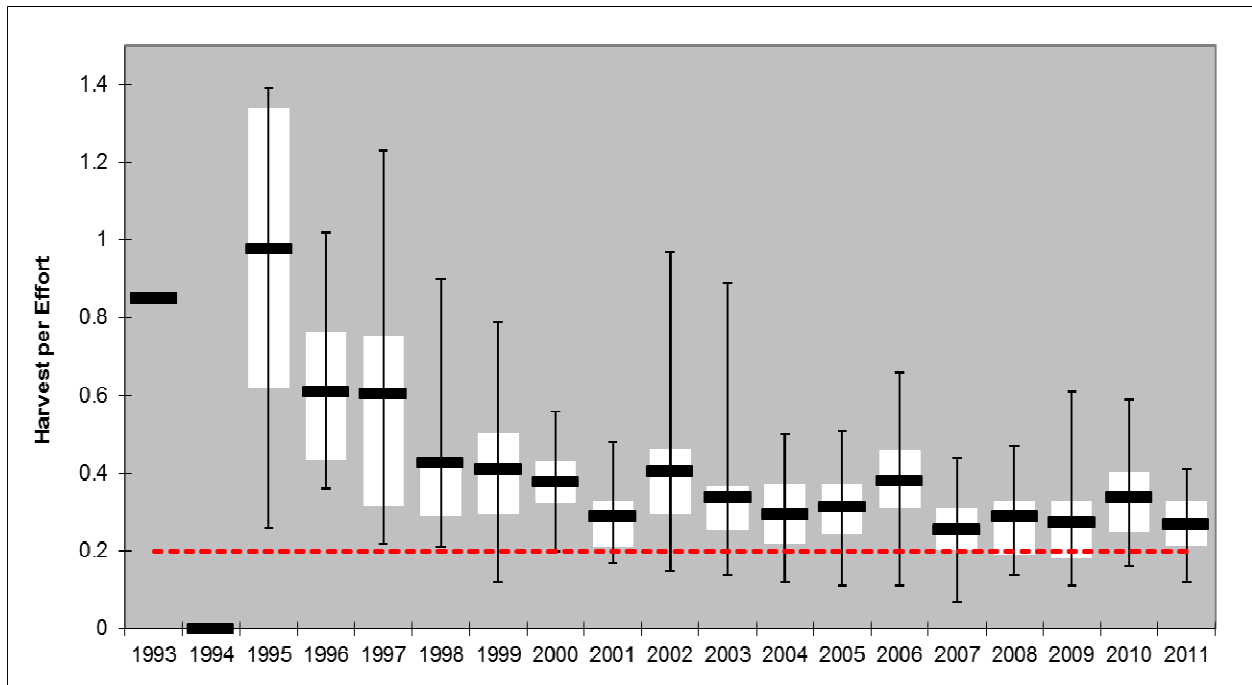


Figure 1. 1993-2011 Harvest Per Effort. The center black bar indicates the mean H/E for each year. The white box indicates the first quartile and third quartile. The whiskers represent the minimum and maximum H/E for each year. The red (hashed) line highlights the 0.20 target H/E level for firearms. Only one property (Brown County) was hunted in 1993, and no properties were hunted in 1994.

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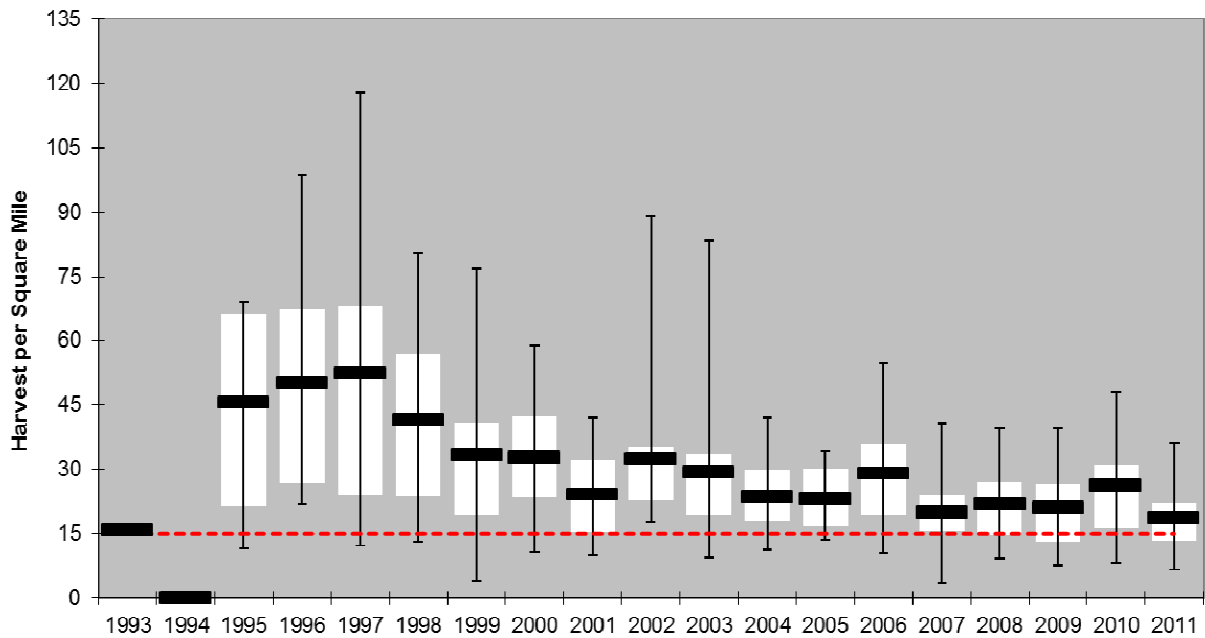


Figure 2. 1993-2011 Harvest Per Square Mile. The center black bar indicates the mean harvest per square mile for each year. The white box indicates the first quartile and third quartile. The whiskers represent the minimum and maximum harvest per square mile for each year. The red (hashed) line highlights the target of 15 harvest per square mile level for firearms. Only one property (Brown County) was hunted in 1993, and no properties were hunted in 1994.

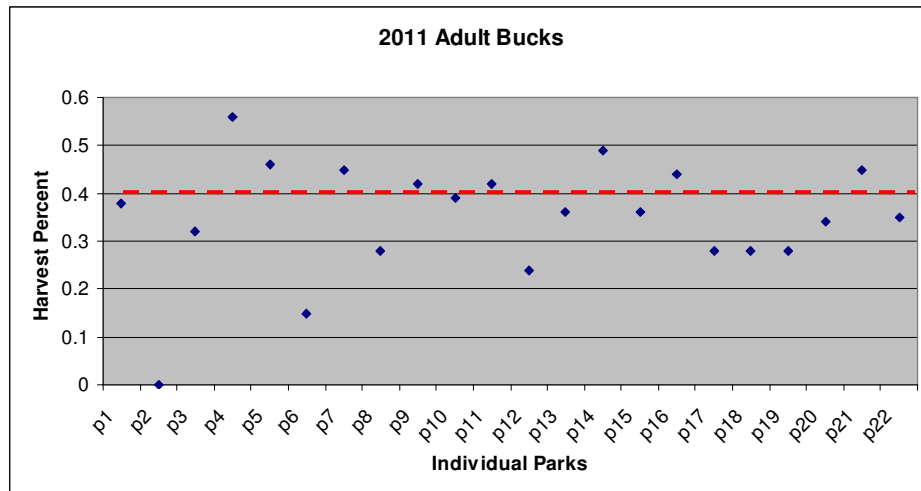


Figure 3. 2011 Percent Adult Bucks Harvested. Each label (p1 – p22) represents one of the 22 properties hunted in 2011.

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All harvested deer were weighed at two park properties in 2011. Table 2 displays the minimum, mean, and maximum weights for field dressed deer at each of the two parks.

Trial Standby Drawing

A standby drawing was held at four state parks in an attempt at filling spots left vacant by originally drawn hunters. The objective was to increase hunting pressure on deer. This drawing was carried out with moderate success. Participating properties were selected based on elevated no-show rates upwards of 50% or higher in recent years. These parks are also laid out in such a way that facilitates an ample staging area for the drawing while providing staff ability to monitor and control potential standby hunters' entry into the park.

Participants in the standby drawing were chosen daily onsite and had to meet the same eligibility as those originally drawn (Indiana residents or in possession of a lifetime license for harvesting deer, 18 years of age by the date of the first hunt, and possession of a valid license to hunt deer in Indiana). Given expected success rates on the first day of each hunt and other factors, parks can generally target no-show rates between 25-30%. The standby drawing reduced what would have been a combined 59% four day average rate of no-shows in 2011 at the four parks to 49%. It is assumed that marginal weather influenced the turnout of those interested in participating in the no-show drawings. Table 3 provides the effect of no-show drawings at each individual park.

Table 2. Minimum, Mean, and Maximum Field Dressed Weight Expressed in Pounds of Individual Deer Harvested at Two State Parks in 2011

	Park 1			Park 2			Combined Average		
	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.
Adult Male	95	130	202	100	149	197	98	149	200
Juvenile Male	49	64	76	52	61	69	51	62	73
Adult Female	82	137	110	63	99	135	73	98	123
Juvenile Female	43	64	78	60	62	63	52	61	71

Table 3. Comparison of No-Show Rates Before and After Standby Drawings at Four Parks in 2011

	Original No-Show	Adjusted No-Show
Park 1	58%	47%
Park 2	57%	51%
Park 3	65%	60%
Park 4	57%	37%

Summary

With the exception of a continued increase in harvest of adult bucks, statistics continue to illustrate overall success for the deer reduction program. Though some parks are more successful than others at achieving a maintenance phase, the data have and continue to indicate habitat recovery as well as sustained deer populations. It should be reiterated that park reductions are not intended to manage populations for optimal recreational hunting. The goal is to simply reduce the impact of browsing to a level that allows some of Indiana's rarest and most unique natural communities to thrive.

Table 4. 2011 Parks Requiring Reduction and Harvest

Park	Harvest
Brown CO.	156
Cave River Valley	9
Chain O'Lakes	87
Charlestown	90
Clifty Falls	28
Fort Harrison	46
Harmonie	126
IN Dunes	43
Lincoln	38
McCormick's	36
Ouabache	38
Pokagon	25
Potato Creek	127
Prophetstown	37
Shades	135
Shakamak	34
Spring Mill	39
Summit Lake	29
Tippecanoe	96
Turkey Run	108
Versailles	153
Whitewater	66
Total	1,546

As stated in previous reports, gone are the abrupt browse lines and emaciated deer of the past but less obvious damage persists throughout the parks. In addition to competing with other fauna for limited resources within park boundaries, deer continue to impact rare, threatened, and endangered flora as well as valuable habitat such as oak forests. The 2011 effort was a success in helping reduce and maintain browse effects. Cumulative 2011 harvest numbers are consistent with recent positive trends (Table 4).

It should be noted that harvest numbers alone have limited value in determining the success of a reduction hunt. Many factors such as park acreage, weather, rate of participation, and other local factors can influence a park's given harvest from year to year. This is an additional reason that H/E is used more as an indicator of success.

Parks requiring reductions in 2012 will be listed and made available along with online applications for 2012 hunts in July 2012 at <http://www.in.gov/dnr/fishwild/5834.htm> along with other IDNR reserved hunts.

